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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Blaze Spotter

See Page 98

A SCIENCE SERVICE PUBLICATION

BIOCHEMISTRY

Nosebleeds Checked

Female hormone treatment controls nosebleeds due to inherited bleeding tendency known as telangiectasia. Doctors trying to determine mechanism of the action.

➤ FREQUENT NOSEBLEEDS, when part of an inherited bleeding tendency called telangiectasia, can be controlled by female hormone treatment, it appears from results reported by Drs. Henry J. Koch, Jr., George C. Escher and John S. Lewis of Sloan-Kettering Institute and Memorial Center, New York, in the *Journal of the American Medical Association* (Aug. 9).

The nosebleeds are the most common symptom of the condition, but other mucous membranes or the skin may also bleed. Victims of the condition may vomit or spit blood, excrete blood in the urine or stools, or have brain hemorrhages.

The bleeding may start spontaneously or may be started by injury, irritation or congestion. Anemia from long-continued loss of blood often results and victims of the condition have bled to death.

The condition is not the same as that other hereditary bleeders' disease, hemophilia, and it is not cancer, although the dilated capillary blood vessels and small arteries form a kind of tumor on the skin and mucous membranes. Inside the nose and mouth, these tumors are a brilliant red color, but the ones on the skin, as they get bigger, turn to violet.

X-ray and radium treatments, snake venom, operations and change of climate are among measures that have been tried unsuccessfully in the past to control this condition.

The tumors usually do not show up before the teen age and become more numerous and more likely to bleed in the third and fourth decades of life.

The New York doctors decided to try a female hormone preparation because of a long relationship between the nosebleeds and the menstrual cycle in one of their patients. The nosebleeds started at the time when female hormone substances would be at lowest level in the cycle, and they became much worse and more frequent following X-ray-induced menopause.

The female hormone treatment was successful in reducing the number and severity of the nosebleeds in this and four other patients. The first patient has not had any for over a year. Because of the small number of patients treated so far and the short length of time, the doctors call their results "preliminary." They are trying now to determine the mechanism by which the hormone produces its effects in this condition.

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FORESTRY

Helicopters Spot Fires

See Front Cover

➤ WITH THE forest fire season becoming more serious in parts of the West, the versatile helicopter may pick up a few new applications.

Already it has been used by the Forest Service on patrols above dry-hot timberland subject to devastating fires. Helicopters also have come in handy when it was necessary to move men from one fire front to another, or when the boss directing fire-fighting activities wanted to get first-hand information.

In charge of the Forest Service's aviation and fire-equipment activities, I. C. Funk said the big problem now is one of getting the "flying windmills." At present, they are scarce.

Aviation has played an important part both in fire fighting and in fire spotting. World War II Army planes often used as ambulances have dispatched smoke-jumpers from the sky into strategic fire-fighting areas. They also have been used to transport personnel and equipment.

Although the Forest Service owns and operates 17 of those planes, most of the aerial work is done under contract by commercial operators.

Shown on the cover of this week's SCIENCE NEWS LETTER is a helicopter scouting a serious forest blaze in California. Information so obtained will aid in planning battle lines for checking the raging fire.

Fire reconnaissance flights and other fire-watching activities depend upon a Danger Rating System which helps rangers keep tabs on the moisture in the brush and in fallen leaves. Wind velocity, relative humidity and the period of time since the last half-inch rainfall are other factors that are worked into the Danger Rating.

Relative humidity seems to be more important than temperature in contributing toward forest fires. Relative humidities of less than 20% are especially dangerous if combined with little rainfall over an extended period.

The forest fire season in the eastern half of the United States comes in the fall and spring when dead leaves clutter the ground and are unprotected by snow. When the leaves fall, they also expose the timber stand to winds which can spread a fire rapidly should one get started.

In the western half of the continent, except in Arizona and New Mexico, the danger period occurs between June and October in southern California, and between June and about Sept. 1 in the Northwest. The worst fires seem to blaze up in August.

Fires in Arizona and New Mexico may start during a period beginning in early May or even late April and ending about the middle of July when rains begin to fall.

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GENERAL SCIENCE

High Altitude Laboratory On California Mountain

➤ HIGH LIVING, literally, for the sake of science will be possible at America's highest altitude laboratories, accessible the year round, on top of Mount Barcroft, Calif.

Financed by grants totaling $108,000 from the National Science Foundation, the Office of Naval Research and the Rockefeller Foundation, the White Mountain Research Station will be available to any U. S. scientist who wants to conduct experiments in regions of little oxygen, intense winter cold or lessened atmospheric pressure.

Observers will live the year round at stations 10,500 feet and 12,500 feet high. They can climb to the peak of White Mountain at 14,256 feet for special observations.

A colony of rats and mice live at the 10,500-foot level.

Cosmic rays, the effects of high altitude on animals, plants and humans, the composition of the atmosphere are being studied. Physiologists from the University of California have charge of this station, located in the midst of Inyo National Forest. (See SNL, Oct. 20, 1951.)

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ELECTRONICS

Electronic Brain Now Mass Produced

➤ FOR $62,500 you can get an electronic brain with a memory for 102,400 nine-digit figures and ability to solve a ten-figure mathematical problem in three-thousandths of a second.

It is the first mass-produced, one a month, and the lowest-priced, fully-electronic digital computer available. Offered to business and industry as well as to government and research laboratories, the first one produced is being delivered by Electronic Computer Corporation to Aberdeen Proving Ground to compute firing tables and test characteristics of rockets, ram-jets and guided missiles.

The computer can take much of the drudgery out of record-keeping and data-handling for businesses, it is claimed.

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ELECTRONICS

Study Radar "Ghosts"

Many different things show up on oscilloscope of radar set. Defense Department panel is investigating causes and shapes of such mysterious blips.

➤ RADAR CAN "see" any of the following things, and all of them can be mistaken even by experienced operators for so-called "flying saucers":

1. Meteors
2. Thunderstorms
3. Clouds of raindrops
4. Clouds of insects
5. Birds
6. Aurora borealis
7. Pockets of moisture from discontinuities in the atmosphere
8. Reflections of ground objects by temperature inversions
9. Balloons.

The Defense Department has a top scientific group investigating radar reflections, trying to determine just what all these things look like on a radar scope and trying to discover what other physical phenomena radar picks up.

The group is the panel on radar reflections of the Defense Department's Research and Development Board. It is headed by Martin Katzin, scientist with the Naval Research Laboratory.

The full potentialities of radar as a scientific instrument that can see and measure what man, with his eyes, cannot see and measure are not yet known. This group is trying to find out what those potentialities are. Its findings should help to dispel the mysterious aura around many of the unexpected blips which appear on radar screens throughout the world.

The Air Force's flying saucer project has investigated many hundreds of radar sightings that those operating the radar could not explain. With the findings from this group, most of such sightings in the future ought to be explicable.

Some things that appear on a radar screen are still not entirely explained. When radar first became seaborne, radarmen were picking up echoes which they thought were made by the waves of the ocean.

There was, however, no relationship between the size of the waves and the size of the radar echo.

Scientists have now tentatively agreed that these echoes are the results of variations in the moisture in the air just above the surface of the ocean. Yet they are still not sure.

Most radarmen are familiar with "clutter" on their scopes. Experts have general ideas about clutter, but clutter is so cluttered that it is hard to separate out all the things that might cause it.

Today there are flying saucers, but in the early days of radar, when it was still top secret, scientists had what they called "angels." Scientific papers were written with titles such as "Investigation of 'Angels' on Radar Scopes." Most of the angels turned out to be not from heaven but from earth.

Radar can track enemy planes, it can identify friendly planes, it can help planes to land. It can also help explain some of the mysteries of the earth, such as the aurora borealis and thunderstorms. But in the opinion of experts it cannot, and does not, see flying saucers.

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ARCHAEOLOGY

Before Cats, Martens Were Egyptian Pets

➤ THE ANCIENT Greeks used the little fur animal, the marten, as a domestic animal for a century or more before they kept cats.

This fact was brought to light when Sidney S. Schipper, Toronto furrier and amateur archaeologist, turned his trained animal-man's eye to a study of ancient Greek art.

The famous statue-base relief dating about 510 B.C., which is known as the "Cat-and-Dog Fight," shows not a cat at all but a marten. And the true cat does not appear on any Greek monument until a hundred years later. Reasons for Mr. Schipper's conclusion are given in a report to *Archæology* (Spring).

The cat in battle pose was studied by Mr. Schipper in a famous painting by Hogarth and in modern photographs and compared with the Greek relief. The angry cat, he points out, takes up its position of defense by humping up its back in the middle, raising its tail, raising a paw or at least leaving it free for action. The cat's fur stands up and the creature draws back and spits.

The marten hunches its back near the rear, preparing to spring. Instead of drawing off, the marten edges toward the dog, baring its needle-like teeth. The cat's traditional weapons are its claws, but the marten bites.

The marten has a small, pear-shaped head, the cat a much rounder one. The cat's fore legs are long and graceful, the marten's stubby.

The small animal in the "Cat-and-Dog Fight" is really a marten, pronounced Mr. Schipper. He finds further evidence to support his conclusion in the history of the cat. The animal was imported into Greece from Egypt where it was a sacred animal protected by laws demanding death for violation of the cat's sacred person.

"It is difficult to believe," Mr. Schipper comments, "that any Athenian would risk such a rare possession in a fight with a powerful hunting dog."

Knowledge that the animal was not an ordinary cat but a vicious killing marten lends more interest to the relief which can be seen as an arena in which each animal has its backers who are placing bets on their favorite.

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NOT CAT, BUT MARTEN—The "cat" portrayed in this cat-and-dog fight is really a marten. Close examination of its tail and the method of arching as compared with modern cats shows the difference between the two kinds of household pets.

PUBLIC HEALTH

Aid Hay Fever Victims

➤ MANY OF the nation's millions of hay feverites are now taking their annual treks to ragweed-free regions of the north to escape the pollens that bring them misery.

Years ago this was all they could do. Today sprays, "shots" and drugs make it possible for them to stay at home in comfort.

The sprays are for killing the ragweed. Many communities conduct ragweed control campaigns every spring and summer.

Sprays of a different kind may also be used by the hay fever sufferer to clear his stuffy nose, but most hay fever specialists in the medical profession agree that best treatment consists of immunizing "shots" plus antihistamine drugs.

Experienced hay feverites know that the "shots" are best given in the spring, so that enough tolerance can be built up to withstand the pollen blowing about at this time of year. But the "shots" help even when started during the hay fever season.

Hay fever sufferers should see a doctor both to get this treatment and to find out which antihistamine will give him most relief and how much to take. While some of these drugs can be bought at the drug store without a prescription, it is wiser and safer to find out from your doctor which one to get and how much to take.

Overdosing with them, which may tempt a desperate hay feverite, is dangerous for anyone. The hay feverite must guard against a special danger from them. The drugs do not keep the pollen from entering the nose, though they relieve the nasal symptoms. If the patient is not getting immunizing treatment, the "shock" organ affected by the pollens may change from the nose to lower in the breathing tract and cause asthma.

Hay feverites are usually advised to keep away from drafts and breezes that stir up dust and pollen and to avoid chilling. Air conditioning which filters out pollen and dust is helpful, but if it cools the air too much, it may make the hay feverite more miserable. His ability to react to the chilling process is altered and a sudden drop in temperature may cause abnormal swelling of tissues in the nose with consequent stuffiness.

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ENGINEERING

Landslide Problem

➤ LANDSLIDES THAT block American highways, far more common than generally believed, are a difficult problem for road engineers in many sections of the country.

The term landslide usually refers to a rapid movement of earth from side embankments of roadside cuts, but can also refer to slow motion movements in which earth gradually slips from roadsides onto the paving. Both cause a major expenditure to highway departments and often a lot of inconvenience to the traveling public.

"Analysis of Landslides," title of Bulletin 49 issued by the Highway Research Board, reports on this problem. Copies of the bulletin may be obtained from the Board, affiliated with the National Research Council, in Washington.

Landslides are not highway problems in the flat sections of the United States, but they are quite common in a mountainous state like West Virginia. R. F. Baker of the West Virginia Road Commission estimates that approximately 1,000 landslides have occurred on his state's 31,000 miles of primary and secondary roads.

He discusses elimination and control methods. One way to eliminate the landslide problem is to relocate the road. Another involves the removal of the landslide in whole or part. Control methods include the construction of such retaining devices as buttresses, cribbing, retaining walls and piling.

To determine the best measures to be undertaken in preventing landslides, studies should be made relative to underlying stable bedrock or soil, seepage strata leading into the area, the topography of the ground surface, and the types of soils in and adjacent to the moving area.

Where there is evidence of an earth movement and a possible landslide, an analysis should be made, Mr. Baker indicates, to determine steps to be taken. There are numerous solutions that can be satisfactorily applied, and the problem can be reduced to a problem in economics.

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TECHNOLOGY

Machine Talks to Itself While Turning Out Parts

➤ A MILLING machine that talks to itself may soon be talked about in industrial circles.

The machine, developed at the Massachusetts Institute of Technology, is given instructions on coded tape regarding the piece to be milled. Coded numbers are used on the tape and can be derived directly from specifications on the part to be worked.

As work progresses on the piece, the machine "talks to itself" by exchanging information between its power and decoding groups of servomechanisms to make sure that the part is milled just right. Servomechanisms are control devices that became prominent during World War II. They have been used to control radar and shipboard guns, and some industrial operations.

The machine does in minutes many tasks that usually take hours. Its control system especially is attractive to machine tool applications because the coded instructions to the machine can be of great precision. (See SNL, Dec. 1, 1951.)

Used tapes can be stored and duplicate parts can be milled, whenever needed. The tape simply is run through the machine again.

Engineers at MIT's Servomechanisms Research Laboratory developed the machine under contract with the Air Materiel Command at the Wright-Patterson Air Base.

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PHILOLOGY

Science Publication Uses International Language

➤ THE LATEST developments in spectroscopy are being distributed world-wide in a publication that uses the new international auxiliary language, Interlingua.

Prof. Forrest F. Cleveland of the Illinois Institute of Technology's spectroscopy laboratory in Chicago has issued four numbers of *"Spectroscopia molecular"* written in the international language devised by a group of linguists after a quarter century of reseach.

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ELECTRONICS

"Flea-Power" Radio Transmits 500 Miles

➤ A "FLEA-POWER" portable radio transmitter-receiver that can send its dits and das over a 500-mile range has been designed and built by amateur radioman Louis D. Breetz of Washington, D. C.

Using only two tubes, one for the transmitter and one for the receiver, the radio measures about 6½ by 5½ by 4 inches. Mr. Breetz reported that his little station puts out about 0.85 watt, but that it can transmit at least 500 miles on frequencies from 7.0 to 7.3 megacycles.

The miniature station has no power supply of its own. Instead, it acts as a sort of parasite, consuming power from home radio sets or car radios through a cable that plugs into the power-audio tube socket of the conventional sets.

To satisfy his desire to work a low-wattage rig, Mr. Breetz "whipped up" his little station over a period of several months. But actually a skilled amateur could put the set together in four or five hours, Mr. Breetz estimated.

A wiring diagram and a technical description of the baby set appear in *QST* (Aug.), a magazine for radio hams.

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MEDICINE

TB Drug Causes Allergic Skin Rash

➤ THE NEW medicine for tuberculosis which contains isonicotinic acid hydrazid may cause an allergic type of skin eruption from contact with it, Dr. James W. Jordon of the University of Buffalo, N. Y., School of Medicine warns.

He reports what he believes to be the first such case in the *Journal, American Medical Association* (Aug. 2). The case occurred in a pharmaceutical chemist.

Other such cases may occur in doctors, nurses, pharmacists and patients, so Dr. Jordon warns physicians to suspect it when skin rashes appear in anyone having contact with this drug.

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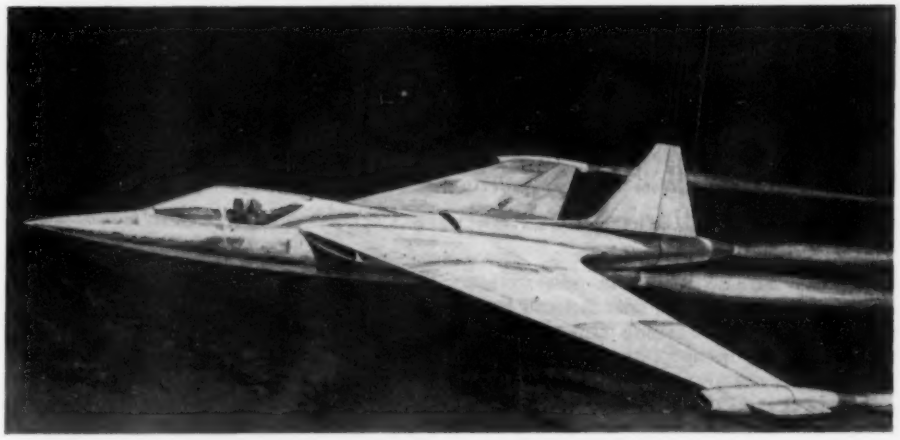

ALL GLASS AIRPLANE—An artist's conception of how a plane would look if built from heat-resistant glass able to withstand the searing temperatures encountered at ultrasonic speeds.

AERONAUTICS

Propose Glass Airplane

Thermal barrier met at ultrasonic speeds might be penetrated by plane made of glass plastic laminate. Most metals would melt at such high speeds.

➤ A GLASS AIRPLANE to withstand the terrific heat encountered at speeds far above that of sound is now proposed.

It would be made not of ordinary glass, but of glass fiber held together with a suitable resin, a glass plastic laminate.

The proposal comes from Thomas E. Piper of Northrop Aircraft, Inc., Hawthorne, Calif. Such glass, he states, appears able to withstand the searing skin friction temperature generated in ultra-high-speed flight much better than most metals used in today's aircraft. At such high speeds, most metals would melt to flabbiness and the crew would be roasted.

Conquering the thermal barrier is a serious problem for aviation engineers interested in planes of the future to travel at perhaps 2,000 miles an hour. Fear of the sonic barrier, long thought to exist at the speed of sound, is a thing of the past because several types of planes have flown at velocities equal to and above that at which sound travels.

At sea level sound travels at around 760 miles an hour. High above the earth, where the sonic barrier has so far been broken, sound travels at about 660 miles an hour. Most supersonic speeds made by airplanes are secret, but one is claimed to have flown at nearly twice the speed of sound.

Now aeronautical engineers are looking forward to planes that will fly two to five times faster than the speed of sound, speeds in the hypersonic region. The principal barrier is the destructive heat created by skin friction at such high speeds, known as the thermal barrier.

At three times sound's speed, the friction between the surface of the plane and the surrounding air produces a 600-degree Fahrenheit heat; at five times, the temperature may reach 1,600 degrees.

Glass laminates, made of fiber glass and bonding resins, have various applications. Experimental wings for airplanes have been made of this construction material, as have one-piece boats.

For his glass airplane Mr. Piper suggests that polyester is the resin now commonly used in glass plastic laminates, with phenolics, silicones and melamines also used.

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MEDICINE

Cross-Breed Viruses For Polio Protection

➤ CROSS-BREEDING OF polio viruses in the hope of developing a breed that can protect humans against poliomyelitis, or infantile paralysis, will be tried under the direction of Dr. Hattie E. Alexander of Columbia University, New York.

She and her associates will try to change one type of polio virus into another, less virulent but protecting type, and they will try growing one polio virus type in the presence of another, but dead, polio virus. This latter approach, it is pointed out, changes some inherited characteristics in bacteria and and may do the same for the polio virus.

The research will be supported by the National Foundation for Infantile Paralysis.

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BIOPHYSICS

Study Bomb Effects

Much time must pass before long-term effects of atomic bombardment will be known. Studies to continue into the second generation of those exposed to the radiations.

➤ SEVEN YEARS after the first atomic bomb raid at Hiroshima, scientists still have not discovered all the long-term effects of the dread weapon upon human beings.

Three nations are now building bombs.

The U. S. is soon to test its first H-bomb, advertised as 1,000 times as powerful as the Hiroshima bomb. It has a stock pile of A-bombs, the most recent models being many times more powerful than the original.

The Atomic Bomb Casualty Commission, established by our government to discover the long-range effects of the bombs which dropped on Hiroshima six years ago and which dropped on Nagasaki three days later, is still carrying on research in Japan, with all the answers not yet in.

It is looking into the effects of radioactivity on the birth rate, on cataracts of the eyes, on diseases of the blood and on many other things. Since studies are planned to go into the second generation, many years will pass before the ultimate effects of the first two A-bombs dropped in war will be known.

Aug. 6 is not the anniversary of the first atomic explosion. That happened on July 16, at Alamogordo, N. Mex. The free world's top physicists and the top military men in charge of the Manhattan District, who had developed the bomb, watched in some suspense as the controls were set. It worked.

Since that time, more than 30 atomic explosions have been set off, at Bikini, at Eniwetok, in Nevada, and at least one in Russia. These have been, almost literally, "shots heard round the world." Radioactive particles from all of them disperse very thinly throughout the atmosphere, and drift from west to east with the prevailing winds high over our heads. In this way, probably, we detected evidence of the first Russian explosion.

Some people have still not given up hope of arriving at a successful method for controlling the war uses of atomic energy. A committee on which Dr. J. Robert Oppenheimer, father of the A-bomb, is serving has been organized by the State Department to look into the present possibilities of control of all weapons, including the conventional and the unconventional.

While bomb production ever increases, the use of a controlled chain reaction for the production of useful power is also being developed. Atomic submarines and planes are under construction. The British atomic energy laboratories were, for the first time, lighted by atomic power. Several large corporations are engaged in building reactors for the production of commercial power.

The power unleashed by the scientists and used for the first time seven years ago, is still in its infancy. We still stand at the beginning of the atomic era.

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BIOCHEMISTRY

Enzyme Research Shows How Life Process Works

➤ HOW LIFE works is being learned from research with enzyme chemicals such as that reported by Prof. David E. Green of the University of Wisconsin Enzyme Institute, Madison, Wis., at the Second International Congress of Biochemistry in Paris.

Enzymes all work so closely together that until recent years it was impossible to separate an enzyme from its system without destroying both the system and the enzyme. Now, Prof. Green pointed out, scientists have developed methods of extracting living enzyme systems from tissues and studying them outside the body.

They can even begin to put the enzymes back together into a system. In doing this they can literally learn how life works.

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• RADIO

Saturday, August 23, 1952, 3:15-3:30 p.m., EDT

"Adventures in Science," with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Alexander Gode, director of research for the International Auxiliary Language Association, and Mrs. Mary Bray, executive secretary of IALA, discuss "International Language."

BIOCHEMISTRY

Itchy Feet Caused by Shoe Lining Chemical

➤ SOME CASES of itchy feet with cracked, blistered and oozing skin come from a chemical used in the rubber adhesive that holds some shoe linings together.

This was the cause of foot trouble in 24 cases seen during the past year by Drs. Irvin H. Blank and Owen G. Miller at Harvard Medical School and the Massachusetts General Hospital. Dr. Miller is now in Salem, Ore.

The chemical that was most frequently the cause of the condition in their patients was an antioxidant, monobenzyl ether of hydroquinone. Some of the patients were specifically sensitive to other rubber antioxidants and accelerators.

In their report to the *Journal of the American Medical Association* (Aug. 9), the two doctors advise other physicians to suspect an allergic hypersensitivity to some ingredient in the shoes when a patient comes with a skin eruption on the feet. Such conditions may otherwise be mistaken for athlete's foot, bacterial infections or other inflammatory skin conditions.

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SURGERY

Speech Regained Quickly

➤ THE PATIENT who has to have his larynx, or voice box, removed can usually talk "quite well" at the end of one month of training, Dr. Nathaniel M. Levin of Miami, Fla., reports in the *Journal of the American Medical Association* (Aug. 2).

Dr. Levin has operated on such patients and has served as their instructor in Veterans Administration, county and private hospitals in the Greater Miami area.

The number of patients undergoing a total removal of the larynx is increasing yearly because surgical techniques now assure from 50% to 60% of five-year, and longer, cures of those afflicted with cancer of the larynx, and many attain a normal life expectancy, Dr. Levin points out.

Instead of being in the hospital eight to 12 weeks, as formerly, patients undergoing this operation now can leave the hospital within 10 to 14 days, Dr. Levin states. And instead of using an artificial larynx, patients nowadays are taught to speak by swallowing air and "burping."

He is taught how to use the diaphragm, esophagus, pharynx and other organs to produce sounds. One-syllable words can readily be managed with one swallow of air. Later, a sequence of syllables can be produced with an equal volume of air. Words of more than one syllable are then attempted, long words being broken into their component parts. A series of short words are then combined into simple sentences, with the emphasis on clarity and sharp, clear diction.

At the end of two weeks, the student can make nearly all of the fundamental sounds, say short words and combine words into simple sentences. During the next three or four weeks the effort is directed toward polishing the speech and eliminating various defects.

The air swallowing becomes almost a reflex habit and speech may, with practice, become so nearly normal that no one can tell that the patient has lost his larynx.

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GALAPAGOS TORTOISES—Smallest of these scarce specimens now in the National Zoological Park weighs 250 pounds, while the tortoise on which Miss Joyce Grissom of Washington sits weighs about 400 pounds. The two tortoises are a gift from Ecuador.

METEOROLOGY

Climate Change Foreseen

➤ "THERE IS a possibility of a quite appreciable permanent change in the world's climate in the next 25 to 50 years," Dr. C. E. P. Brooks, British meteorologist, told a meeting of U. S. Weather Bureau experts in Washington.

If the present trend continues, he said, the world will warm up to such an extent that it will have important economic and political effects. However, he said, variations in the average temperatures between one year and the next are now sometimes greater than the permanent change that could take place over 25 to 50 years.

Dr. Brooks pointed out that the world's glaciers and the arctic ice pack have been retreating for the past 100 years. If this retreat continues, he said, then the climatic changes he predicts will come about.

Dr. Brooks said that, in 1000 A.D., Norsemen who colonized Greenland were able to grow crops and to become self-sustaining on those crops. While he did not see the ice retreating to quite this extent, he thought the climatic changes would have an advantageous effect on Canada's already booming economy and on other northern parts of the world.

The glaciers are now, he declared, at their farthest stage of retreat since 1650. Furthermore, he said, such a process, once started, is hard to stop. Yet it could be stopped by a few very cold and snowy winters occurring in succession.

Along with the change in temperature, Dr. Brooks said there would be a tendency for more frequent dry years to occur.

If the Greenland and arctic ice were to melt away entirely, which is doubtful, he said, the waters of the oceans would rise about ten feet, thus cutting back the land areas of the world.

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AGRICULTURE

Increase Sugar In Sugar Beets

➤ GROWTH - REGULATING SPRAYS, such as maleic hydrazide, may prove useful in increasing the sugar concentration of sugar beets if applied shortly before harvesting, Dr. David Ririe, University of California agronomist, reported at the Annual Sugar Beet Day held in Davis.

Low sugar concentrations at harvest, Dr. Ririe stated, may be due to continued active growth or to excessive seed stalk production by the plants. This tends to use up sugars manufactured in the leaves rather than storing them in the roots.

Such a situation is particularly true when sugar beets are growing under conditions of ample nitrogen supply and relatively warm night temperatures, or under conditions which tend to produce bolting.

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AERONAUTICS

Propeller Feathered When Engine Fails

➤ AIRPLANE CRASHES may be reduced in the future by an automatic control system that feathers the propeller blades when an engine fails.

The automatic propeller feathering system warns the pilot with signal lights when an engine fails. At the same time, it begins to turn the propeller blades so they face into the wind.

That reduces drag on the plane and may mean the difference between a safe flight and a catastrophe. If the propeller blades are not feathered, they act as a windwill, creating considerable resistance and seriously hampering flight.

Sometimes engines fail at the most critical times in flight. An engine may go dead during take-off, for instance, when a plane needs all the power it can muster to lift itself off the ground. Under those circumstances, the pilot has to act quickly.

It would take him a few moments to see which engine was stopping, and then a few more moments to get the propeller feathered. Sometimes all that cannot be done before the blades begin "windmilling" and start slowing down the plane.

Invented by Lawrence J. Bordelon of San Diego, Calif., the automatic system should relieve the pilot of that bit of work during emergencies when his attention is needed elsewhere. The patent was given number 2,605,849 and was assigned to Consolidated Vultee Aircraft Corp., by its inventor.

Science News Letter, August 16, 1952

PALEONTOLOGY

Discover Rare Fossil, Ten-Rayed Starfish

➤ DISCOVERY OF an extremely rare fossil, a 10-rayed starfish that lived about 325,000,000 years ago, has been reported by Prof. John W. Wells of the Cornell University geology department, Ithaca, N. Y.

The only other specimen of this species is a fragment in the American Museum of Natural History in New York.

The find was made five miles east of the Cornell campus by two graduate students looking for snakes on Mt. Pleasant in the Cascadilla Creek valley.

Three of the 10 rays in the Cornell fossil are complete and it is nearly seven inches in diameter. Another rarity is the small round disk known as the madreporite or sieve plate which is preserved with the fossil. The starfish lived in the Devonian period, or Age of Fishes, in the Paleozoic Era.

The species was named Ptilonaster Princeps in 1868 by James Hall. The fragment he described has only three rays, one complete. The sharp angle between these, however, showed that the species had more than the usual five rays.

Science News Letter, August 16, 1952

PHYSICS

Needs "Middle Aged" Water to Check Dating

➤ DO YOU have any water lying around the house that is at least five but not more than 20 years old? Such "middle-aged" water is badly needed by a scientist at the University of Chicago to check on some nuclear research.

He has a newly-developed method for dating samples of water and wants to test its accuracy. His method is based on measuring the amount of radioactive tritium, the heavy isotope of hydrogen, present in a sample. To check it, Dr. Willard F. Libby, professor of chemistry at the university's Institute for Nuclear Studies, would like at least 30 gallons of water whose age is accurately known.

Best place for finding such an amount is in a hot water heating system of the type installed more than 15 years ago in which the water recirculates and has not been changed. Other possible sources for smaller amounts of accurately dated water are old fire extinguishers, coolers using recirculated water and containers of water stuck away in attics and garages.

With the water-dating method, Dr. Libby hopes to develop a scale for measuring the age of water as accurate and reliable as the one for dating archaeological remains using carbon 14. Naturally occurring tritium results from bombardment of nitrogen in the upper atmosphere by nuclear particles. It is present in extremely minute quantities in water. Even in 30 gallons, the amount of tritium obtainable would be too small to be weighed and its presence could be detected only by a Geiger counter.

Science News Letter, August 16, 1952

VETERINARY MEDICINE

Hog Disease Symptoms Like Foot and Mouth Ill

➤ VESICULAR EXANTHEMA, hog disease that has caused the Secretary of Agriculture to proclaim a state of emergency and has brought a quarantine affecting 16 states, has symptoms very much like those of foot and mouth disease. In fact, each animal must be tested to make sure that it has vesicular exanthema and not foot and mouth disease. And that is one of the prime reasons for present official and unofficial concern about the disease in agricultural quarters.

These symptoms include blisters above the hoof and between the toes and on the snout and nostrils.

Concern is also felt because June 16 of this year was the first time this hog disease appeared anywhere in the nation outside of California. The virus of the disease has been known there for about 20 years. The sudden and rapid spread is disturbing.

The cause of this spread has not been traced positively, but officials suspect it is through garbage fed to hogs. For that reason officials now require that pork used as garbage to feed other hogs must be thoroughly cooked. Heating kills the virus.

This hog disease does not spread to humans, even if they eat meat from infected hogs. But farmers may suffer considerable financial loss because the porkers go off their feed while sick, lose weight and require considerable extra food to bring them back to marketable weight.

A state of emergency has been declared by Secretary of Agriculture Brannan to get funds for the eradication program.

The disease has appeared in one or more counties of the following states: Alabama, Arizona, California, Georgia, Illinois, Iowa, Kansas, Missouri, Nebraska, New Jersey, New York, Ohio, Oregon, South Dakota, Washington and Wyoming.

Science News Letter, August 16, 1952

BIOCHEMISTRY

Antibiotic Stops Acne Complications

➤ ENCOURAGING RESULTS in preliminary trials of a new antibiotic medicine for germ diseases are reported by Drs. Fordyce R. Heilman, Wallace E. Herrell, William E. Wellman and Joseph E. Geraci of the Mayo Clinic, Rochester, Minn.

The new antibiotic is known as erythromycin and also as ilotycin. It comes from an organism called *Streptomyces erythreus*, the latter word referring to the color red. It was discovered by Dr. J. M. McGuire and co-workers at Eli Lilly & Company, Indianapolis.

One of the patients who got some of the new antibiotic was a 21-year-old man who had a badly infected skin with abscesses under the skin complicating the acne. Within a few days after treatment with erythromycin the skin infection showed pronounced improvement. He subsequently was able to have a sandpaper treatment for the acne.

Erythromycin has so far been given by mouth. A form suitable for injection into the veins will, it is hoped, become available in the near future.

The antibiotic does not seem to have any serious toxic effects. Some patients had digestive disturbance, nausea and vomiting when maximum dosages were given.

Erythromycin is much like penicillin in the germs it attacks. In addition, it is effective against the organism that causes whooping cough. It has "remarkable activity" against a group of germs belonging to the Corynebacterium family. Included in this group are the germs of diphtheria and of some diseases of sheep, horses and cattle. The Mayo doctors suggest that it should be tried in cases of these infections.

Some germs may gradually become resistant to this new antibiotic.

The trials of the new antibiotic in more than 40 cases were reported in the *Proceedings of the Staff Meetings of the Mayo Clinic* (July 16).

Science News Letter, August 16, 1952

IN SCIEN

PUBLIC HEALTH

Warn on Danger Of Cleaning Fluid

➤ HOUSEWIVES AND others who do dry-cleaning at home should be careful if they use cleaning compounds containing carbon tetrachloride.

These have the advantage of being non-flammable, so the fire danger is avoided. But if the fumes are inhaled or the fluid is accidentally swallowed the chemical may cause rapid poisoning.

This warning comes from the New York City Board of Health which requires that such cleaning compounds be labelled with special warnings against misuse.

The early symptoms of carbon tetrachloride poisoning can be headache, nausea, vomiting, loss of appetite or jaundice. Continued exposure to the chemical can damage the liver and kidneys and may result in death. Different individuals have varying susceptibilities to carbon tetrachloride.

What makes one person seriously ill may not have the same effect on another. Persons who have been taking alcohol are particularly susceptible to the poisonous effects of carbon tetrachloride.

Other factors which determine the degree of damage carbon tetrachloride may cause is the amount inhaled, the size of the room in which it is used and the amount of ventilation in the room.

"Cleaning compounds containing carbon tetrachloride must not be used in confined spaces or in rooms with the windows closed, but should be used in well ventilated rooms where inhalation of the toxic chemical can be avoided," warns Dr. John F. Mahoney, New York City Commissioner of Health. "In addition cleaning compounds as well as other poisonous chemicals and potent drugs, should be kept away from children."

Science News Letter, August 16, 1952

CHEMISTRY

Gas Detector Tells Of Chlorine Leaking

➤ A QUICK-ACTING chlorine gas detector has been invented to warn truck drivers and warehouse watchmen of leaks in chlorine bottles and to give them time to repair the leaks before serious accidents occur.

Invented by Carl Sundstrom of Syracuse, N. Y., and assigned to the Allied Chemical & Dye Corporation, the device continuously samples air from around the bottoms of the chlorine containers. When it "smells" chlorine, a test strip changes color, warning the truck driver or the watchman of a leak. The device was granted patent number 2,606,101.

Science News Letter, August 16, 1952

SCIENCE FIELDS

MEDICINE

New Medicine for Parkinson's Disease

➤ SOME PATIENTS with Parkinson's disease, also called paralysis agitans and, popularly, shaking palsy, may soon be getting a trial of a new medicine, W-483, following reports on it by Drs. William H. Timberlake and Robert S. Schwab of Harvard Medical School and Massachusetts General Hospital, Boston.

The new medicine is called Parsidol in Europe, Lysivane in the British Commonwealth, and W-483 by the Boston doctors. Chemically, it is (diethyl amino-propyl)-N-dibenzoparathiazine hydrochloride.

The Boston doctors tried this new medicine in a group of patients coming to the out-patient department of the hospital about once a month and also in a group of private patients who saw their physicians or called them on the phone much oftener.

In the out-patient group 19% improved on the new drug, compared to 53% of the private patients. The difference, apparently, was because adjusting the dosage and changing from the drug the patient had been getting could be done more satisfactorily when the doctor could see the patient regularly and oftener than once a month.

In the case of one patient cited, it took 11 weeks to reach a dosage schedule that gave an "excellent result." And in this case it was found that the patient had to take Artane and Dexedrine with W-483. In fact, the doctors state in their report to the *New England Journal of Medicine* (July 17), W-483 was "most efficient when combined with other drugs."

Science News Letter, August 16, 1952

PUBLIC HEALTH

Modernize Your Battle Against Household Flies

➤ BE SCIENTIFIC and modern in your fight against mosquitoes and flies this season. Of course you want to get rid of these pesky and potentially disease-carrying nuisances. Many householders are using DDT but do not know the most efficient way to use it. And many forget that sanitation and cleanliness are also needed to keep down flies. Garbage should be kept covered and disposed of at least twice a week in hot weather because flies breed in it. Wash garbage cans thoroughly after emptying.

Both DDT space sprays, such as the familiar aerosol bombs, and DDT residual sprays are recommended for use in homes and summer cottages. But they are used differently. Here are directions from the U. S. Department of Agriculture:

To clear rooms of flies, also mosquitoes, close doors and windows and use aerosols containing DDT, pyrethrum, or both. The mist given off is extremely effective for an immediate kill of the insects present, but it does not have a lasting effect. Open the room after flies and mosquitoes are killed.

Then use a 5% DDT residual oil spray. The residue of DDT left after the spray dries kills flies that walk or rest on surfaces that have been sprayed. To kill flies before they can enter the house, spray outside surfaces where they gather—doors, door frames and doorsteps, porches, screens and garbage pails. The spray can be applied to both sides of the screen by brushing on with a paint brush, if desired. This is a convenient way to treat kitchen window screens and prevent the spray from drifting through onto food or cooking utensils. Outside surfaces may need spraying every 2 to 4 weeks.

Science News Letter, August 16, 1952

ELECTRONICS

Home Radio Prints Circuits on Plastic

➤ SMALLER, LIGHTER and more rugged home radios are predicted as a result of a new production process that prints complicated radio wiring right on the plastic chassis while tube sockets are being bored.

A thin pattern of copper substitutes for the usual radio wiring layout in a Motorola radio set. The thin strips, each representing a wire, are applied to the chassis by machine so that virtually all hand-soldering is eliminated. Tubes and other parts are then plugged into the sets.

Several thousand radios, mass-produced by the process, have been field tested already. Results show that the process can be adapted safely to portable radios and eventually to television sets.

Printed circuits became a reality in World War II's proximity fuze. Today they are working in some amplifiers, transmitters, receivers, TV sets and hearing aids.

Science News Letter, August 16, 1952

CHEMISTRY

Cashew Nut Shell Binds Pigments to Fabrics

➤ TWO SCIENTISTS at the University of Bombay have found that the lowly cashew nut shell can be used to bind color pigments to fabrics.

The shells yield a liquid resin that mixes with ethyl cellulose to form a binder that keeps the powdered coloring particles from rubbing off. Other binders are used throughout the world to get the same results.

Details of their experiments were reported by K. K. Patni and S. R. Ramachandran to the Council of Scientific and Industrial Research, New Delhi, India.

Science News Letter, August 16, 1952

ACOUSTICS

Like Bats, Mice Hear High-Pitched Sound

➤ SOME KINDS of mice can hear sounds too high to be detected by human ears, Lee R. Dice and Elizabeth Barto of the University of Michigan, Ann Arbor, find.

The mice they tested were deermice and juniper-mice belonging to the genus *Peromyscus*. Some of them could hear ultrasonic sounds of about the same frequency range as those used by bats for their radar-like navigation aid. Whether these mice can make ultrasonic squeaks as high as those they can hear is not yet known.

The *peromyscus* mouse almost always moves its ears when exposed to a sudden sound. It was by watching for these ear movements that the scientists could tell when the mouse heard a sound in the ultrasonic range. As a check, they plugged the ears of the mice with cotton soaked in Vaseline. Responses to ultrasonic sound were then greatly reduced.

Mice that were conditioned to respond to sound by touching a pencil to avoid an electric shock coming with the sound, touched the pencil and moved their ears to the sound at ultrasonic frequencies as well as at sound heard by human ears.

Epileptic deermice that go into convulsions when they hear some kinds of sounds, such as that of jingling keys, went into "dashing seizures" or strong convulsions at sounds of the same ultrasonic ranges and pressures that made other mice twitch their ears.

The experiments showing that some mice can hear ultrasonic sounds are reported in detail in the journal *Science* (Aug. 1).

Science News Letter, August 16, 1952

TECHNOLOGY

High Temperature Fiber Of Alumina and Sand

➤ A NEW fiber, made of aluminum oxide and sand, that can withstand extremely high temperatures is being manufactured by the Carborundum Company, Niagara Falls, N. Y.

Called "Fiberfrax," it is fine enough to be used in highly specialized papers or as a superfilter.

The manufacture of this vitreous aluminum silicate involves the same type of electric furnace melting that produces aluminum oxide abrasives, and the production equipment requires no critical materials.

At the present time, the new ceramic fiber is finding applications as high-temperature insulation in combustion and exhaust systems of jet engines. It can replace or be combined with asbestos. It can be bonded into insulating panels that will both resist fire and deaden sound. As a filter it can improve the efficiency of gas and fume filtration.

Science News Letter, August 16, 1952

METEOROLOGY

Weather in a Dishpan

Circulation of a hemisphere's weather is duplicated in an aluminum dishpan in the laboratory. Rotating "weather bowl" studies will help show what makes tomorrow's weather.

By WADSWORTH LIKELY

➤ "ALL OUTDOORS" is being cut down in size and brought inside the laboratory. Now the weather of half a hemisphere, or a reasonable facsimile thereof, can be duplicated in a 15-inch aluminum dishpan.

A 30-year-old scientist, Dr. Dave Fultz, is responsible. He has successfully accomplished what weathermen have dreamed of for years—construction of a laboratory model for studying atmospheric phenomena under controlled conditions.

With his dishpan, Dr. Fultz can do fundamental research into what makes our weather. It promises long strides in understanding weather processes.

In times past, it was thought that there were so many complex factors involved in weather circulation that any laboratory model would have to be as big as all outdoors itself in order to be a valid model. But Dr. Fultz has solved the problem, at least for some of the relatively large scale motions.

Evolved Into a Bowl

His dishpan has now evolved into a 15-inch glass bowl with vertical sides about six inches high and a flat bottom. It is placed on a rotating table, something like a phonograph turntable. Sometimes two liquids of different weight and color are carefully placed in the bowl, to represent the two different densities of air found along a cold or a warm front.

At other times only one liquid is used. In that case a heat source, an electric resistance heater, is applied to the outside of the bowl, taking the place of the sun. Thus the center of the bowl is the North Pole and the outside rim the equator. Aluminum powder is sprinkled on the surface so the currents, eddies and cyclones that may develop can be watched and photographed.

The bowl is set spinning around, just as the earth spins. To "stop" the motion of the "earth" so that the relative motions of the "air" currents can be watched, a rotoscope is used. This optical instrument rotates in the opposite direction at the same speed as the bowl and makes the image of the bowl appear to be stationary.

It is fascinating to watch a circulation develop as the bowl starts spinning around. The effect is something like it would be to watch the daily weather map in a newspaper in motion, except, of course, the picture in the bowl extends over the northern hemisphere.

However, it is more like watching the weather bureau's charts of the general circulation between 10,000 and 40,000 feet. Up there, the wind direction is predominantly from west to east, and this current undulates from north to south.

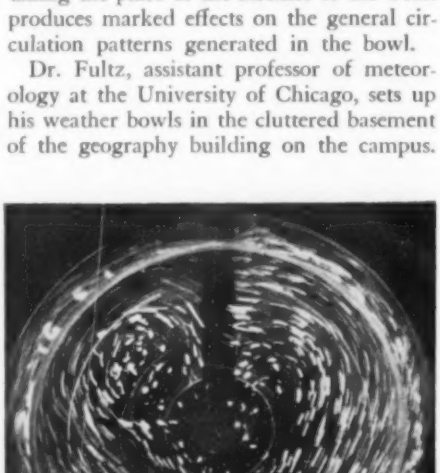
The same undulations can be seen developing on the surface of the bowl. Shortly, you can see one of the undulations of waves break off and form an anticyclone, a clockwise movement of the air around a central point. You can see how the cold weather moves from the pole and the warm weather from the equator in a complex but interrelated pattern.

Jet Stream Simulated

Even jet streams, those extremely fast air currents in the upper air, form in the bowl, and the aluminum powder in the jet stream races around the bowl much faster than the powder on each side of the stream.

Dr. Fultz even puts "mountain chains" in his artificial weather patterns. A small block of wood resting on the bottom and taking the place of the Rockies or the Urals produces marked effects on the general circulation patterns generated in the bowl.

Dr. Fultz, assistant professor of meteorology at the University of Chicago, sets up his weather bowls in the cluttered basement of the geography building on the campus.



WEATHER BOWL — Circulation pattern of the northern hemisphere's weather is shown by aluminum powder sprinkled on top of the swirling liquid in a dishpan.

He credits Dr. Carl-Gustav Rossby, the father of modern American meteorology, with much of the inspiration for his studies.

The young Ph.D. won this year's Meisinger award for his work with laboratory weather. The Meisinger award is given each year by the American Meteorological Society to the young meteorologist who has done the best research job.

Meteorologists look hopefully to Dr. Fultz's work to provide some of the answers as to what makes tomorrow's weather by illustrating the relative importance of the forces and influences which act on the air in which we all live.

Influence of Mountains

The Rockies, and other mountain chains, may well have a world wide influence on the kind of weather we get.

This is the conclusion of Dr. Robert R. Long of Johns Hopkins University, Baltimore, who brought the mountain chains into the laboratory to prove his point. Dr. Long puts a model of the weather of half the world into a bowl and studies the general circulation. Dr. Long learned about weather bowls by working with Dr. Fultz at the University of Chicago.

His bowl consists of two half globes, one inside the other. The space between is filled with water. When his bowl is set rotating, the currents and eddies of the water resemble the general circulation of the atmosphere over the northern hemisphere.

Dr. Long stuck objects of various shapes and sizes into the water between the two hemispheres to represent mountains and mountain chains. The mountains, attached to an independent arm, were also rotated, either more slowly or faster than the bowl, to simulate either west-to-east or east-to-west wind currents.

Weathermen have shown that the general pattern of our weather is determined by the relative strength, speed and direction of the wind currents between 10,000 and 30,000 feet. Dr. Long showed, in his bowl, that mountain chains have an influence on these wind currents at heights far above their summits.

The atmosphere—in the case of the bowl, the water—above the mountain chain tends to remain stationary, thus putting up an even higher barrier to the winds trying to get over the mountains.

When they do get across, anticyclones are formed. Waves in the general circulation appear that continue around the world.

It is the size and height of these waves which determine how and whether cold air can get down from the arctic and warm air from the equator. These experiments show that long, thin barriers resembling the Rockies and the Andes are very effective in producing well-defined waves.

METEOROLOGY

Many Potential "Saucers"

➤ BETWEEN 4,000 and 10,000 balloons of all shapes and sizes are launched each day in the United States by government agencies and private institutions, thus causing many of the "flying saucer" scares.

Some fly way up at 100,000 feet, making measurements of weather conditions and cosmic rays. Others go up only 10,000 to 30,000 feet to provide the Weather Bureau and the Air Weather Service with information on which to make forecasts.

They rise from about 1,000 launching sites in all parts of the United States. Naval research scientists and the Air Research Defense Command let some of the largest go—to the highest altitudes.

One of these research balloon flights caused a "flying saucer" scare in central Ohio recently. Four balloons tied together, lifting research instruments high into the atmosphere, were seen by many Columbus residents.

The Air Force's Air Intelligence Information Center, in charge of Project Bluebook which investigates reports of strange objects in the air, says it cannot make a positive identification of a balloon in less than 15 hours because of the great number of them in the air every day.

The high-flying balloons released by the Air Research Development Board are 45 to 110 feet in diameter and up to 130 feet long. The height at which they fly can now be controlled for periods as long as three days.

Beginning next fall, there will be more of the big balloons in the air. ARDC will start daily flights from three West Coast launching sites. They will be tracked as they move across the country with radar and by ground observers.

They will discover new facts about winds, turbulence, temperature, atmospheric pressure, useful for guided missiles and jets.

Science News Letter, August 16, 1952

ARCHAEOLOGY

Roman Weighing Devices

➤ ROMANS 1,800 years ago had weighing instruments more convenient than our own, and the Roman shopper of that day probably carried his own instrument with him to weigh out what he bought.

This is indicated by a bronze instrument in the Walters Art Gallery, Baltimore, Md. It works on the lever principle. The portable bronze rod, 14 inches long, may be hung up by one of three hooks, each on a different face of the rod. The sack or chunk of meat to be weighed is hung on hooks suspended from a chain at the end of the short arm of the lever. Similar scales are still used.

But instead of hanging one of a series of graduated weights from the long arm, as do many of our weighing instruments today, a single counterweight was used. This was slid back and forth along the graduated scale on the long arm of the lever until it just balanced the object being weighed. The weight could then be read from the scale.

The Roman instrument maker apparently made his instrument first and then marked off his scale by testing it rather than graduating it by following mathematical calculations, Dr. Dorothy Kent Hill, curator of Ancient Art at the Walters Art Gallery, comments in reporting the instrument in *Archæology* (Spring).

The instrument has three faces and three scales, each one exposed, at a convenient angle for reading, when the scale was hung by its corresponding hook. One or another of the scales could be used to weigh amounts up to 47 Roman pounds except for articles weighing 17 and 20 pounds where there was a gap between scales.

The original user of the instrument may have taken care of the gap by hanging on an extra weight, or he may merely have hoped that he would never be called upon to weigh an object of that particular size.

Science News Letter, August 16, 1952

TECHNOLOGY

Fabric Dyeing Method Uses Pressure Machine

➤ DYEING BATCHES of fabrics in the textile industry is improved with a process using a new pressure fabric dyeing machine. The machine is said to provide the first major change in batch dyeing methods for fabrics in 500 years.

The machine was designed by Paul M. Cole of the Du Pont Company in its textile research laboratory, Wilmington, Del. While ready for demonstrations, it is not yet ready for commercial production.

The machine still needs the refinement of the textile machinery manufacturer and the experienced touch of the practical dyer, according to Mr. Cole.

It is known as a barotor, the name coming from "bar rotor." The principal mechanical parts consist of a rotor and uniquely operating bars within a steel cylinder. The machine was developed particularly for dyeing new synthetic-fiber fabrics.

Its advantages include holding the fabric in open width at all times, tensionless and wrinkle free. Also all points are in uniform and frequent bath contact, and the machine can be used with all fabric constructions, both filament and spun.

Science News Letter, August 16, 1952

ASTRONOMY

Radio Noise Outbursts

Hisses at microwave frequencies usually accompanied by solar flares and shortwave radio blackouts. Noise reported at 35,000 megacycles, highest frequency yet.

➤ OUTBURSTS OF radio noise at microwave frequencies are usually accompanied by flares on the sun and sudden blackouts of shortwave radio signals, studies reported in London show.

From May 1 to Oct. 1 last year, five bursts of radiation were recorded at a frequency of 35,000 megacycles on a two-foot basket-shaped radiotelescope at the Naval Research Laboratory, Washington.

Four of the bursts coincided with observed flares and sudden ionic disturbances, Dr. John P. Hagen and Nannielou Hepburn of the Naval Research Laboratory report in *Nature* (Aug. 9).

This is the highest frequency at which radio astronomers have recorded tremendous increases in the amount of radio radiation the sun is putting out. The radiotelescope used traps waves about a third of an inch long, much longer than the waves of visible light that you see or photograph, but considerably shorter than the radio frequency which brings radio programs to your home.

Bursts at very short radio wavelengths such as this are believed to come from deeper within the sun's atmosphere than those of longer wavelengths. These bursts usually coincide with those of longer wavelengths.

The bursts at a wavelength of 8.5 millimeters (a frequency of 35,000 megacycles) differ from those at longer wavelengths in two main respects: 1. The bursts usually end much sooner and 2. Their amplitude is much smaller. The largest burst yet observed at a wavelength of 8.5 millimeters caused an increase in the total solar radiation of only 27%. None of the bursts observed lasted more than five minutes.

The radio receiver in the spring of 1951 was adjusted to follow the sun during the daylight hours and record continuously the intensity of the sun's radiation. Previous work had shown that the intensity of the sun's radiation at 8.5 millimeters wavelength was much more constant than at longer wavelengths. The original work, however, was done with a highly directive beam, so that only a portion of the sun's surface was observed at one time.

In the new radiometer the sun is seen as a point source. With all the sun's disk visible at one time, sudden changes in the intensity of the radiation anywhere in the sun's surface can easily be noted.

Science News Letter, August 16, 1952

NATURAL RESOURCES

India's Steel-Making Ores

➤ INDIA MAY be the "key" nation of southeastern and eastern Asia in future industrial and mechanical developments based on the production of steel.

It is the one country of the area that has large deposits of iron ore, manganese and coking coal, essential raw materials for a great iron and steel industry.

Japan has the largest iron and steel industry in the Far East but most of the ore used in its blast furnaces has come in the past from China and Manchuria, sources not available today.

Malaya and the Philippines are now the principal Asiatic exporters of iron ore to Japan, with some coming from the United States, Canada and India. Japan's largest domestic iron mine provides a low-grade magnetite ore that requires fine grinding and magnetic concentration.

India's enormous iron ore and coal deposits are still little developed in proportion to their size, either for home use or exportation. Developments are planned, and within a decade or so India may become far more important than now in steel production, its present position being number two in the East.

A publication of the U. S. Bureau of Mines, "Sources of Iron Ore In Asia," states that the large iron ore deposits and coal mines west of Calcutta are marvelously near each other, and with abundant cheap labor available, give India the potential for a large iron and steel industry when nature's gifts are fully utilized.

Science News Letter, August 16, 1952

PUBLIC SAFETY

Traffic Studied by Engineer "Policemen"

➤ TO GATHER more information about the factors involved in traffic accidents, J. H. Mathewson and D. M. Severy of the Institute of Transportation and Traffic Engineering at the University of California at Los Angeles have temporarily become "traffic policemen."

While not assuming law-enforcing powers, they have converted an automobile into a prowl car, complete with short-wave radio. By picking up police calls relating to accidents within a five-mile radius of the U.C.L.A. campus, they hope to arrive at the scene of crashes in time to gather significant data.

The study is being made with the cooperation of the Los Angeles Police Department, and regular members of the police force will conduct their usual accident investigations.

The U.C.L.A. engineers will seek such information as length of skid marks, weights of cars involved, structural deformation and nature and extent of injuries to car occupants. By evaluating and correlating such data, they hope to develop new traffic safety factors.

Science News Letter, August 16, 1952

INVENTION

Hypodermic Needle Operated by Spring

➤ A SPRING-OPERATED hypodermic needle designed to make self-administered injections easier for victims of diabetes, hay fever, malaria, rheumatism and similar diseases requiring "shots" has been invented by Johannes W. H. Uytenbogaart of Wassenaar, Netherlands. He assigned it to Auguste Rooseboom of Bronxville, N. Y.

Attached to a retractable piston, the needle normally is kept in the withdrawn position. A cup-like affair filled with a sterilization fluid covers it.

When the device is to be used, the proper amount of fluid is drawn into a chamber and the instrument is held against the skin. A lever is pressed releasing a spring. The spring drives the needle into the flesh, squirts out the fluid, then retracts the needle. The device was assigned patent number 2,605,766.

Science News Letter, August 16, 1952

ENTOMOLOGY

Bees "Meaner" in Poor Weather Than in Good

➤ IF THE weather is cold, rainy, cloudy or windy—look out for bees. They're "meaner" on such days than when the weather is pleasant.

Scientists at the University of California's College of Agriculture at Davis are trying to develop gentler strains of honeybees.

They find that if, because of foul weather, a bee is forced to take a day off from a good honey flow, he will make things miserable for anyone showing up around his hive. Cases have been reported of beekeepers who were stung as many as 200 times during a single day's survey of hives.

The temper of a bee is of extreme importance to the beekeeper because mean bees will slow down his operation and make his life miserable by constant stinging. Beekeepers actually avoid purchasing bees with known strains of meanness.

Science News Letter, August 16, 1952

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. books in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AMERICAN HEALTH DIRECTORY—Henry Hatton—*Public Affairs Press*, 96 p., paper, $2.50. A list of the numerous health agencies and societies classified according to fields of interest.

APPLIED PSYCHOLOGY—Harold Ernest Burtt—*Prentice-Hall*, Abridged Edition, 465 p., illus., $6.35. In this edition, illustrations have been reduced and subjects of lesser importance dropped.

CHEMICAL PHYSIOLOGY OF ENDOPARASITIC ANIMALS — Theodor von Brand — *Academic Press*, 339 p., $7.50. Bringing together and reviewing literature having to do with the complicated life cycle of parasites, their pathological effect on the host and other similar topics.

EMPLOYMENT PROBLEMS OF DISABLED YOUTH IN GLASGOW—T. Ferguson, A. N. Macphail and Margaret I. McVean—*Her Majesty's Stationery Office*, Medical Research Council Memorandum No. 28, 66 p., paper, Approx. 42 cents. A report of three studies, one of which deals with the extent to which social and environmental factors contribute to youth's handicaps.

FERNS OF MICHIGAN—Cecil Billington—*Cranbrook Institute of Science*, 240 p., illus., $5.00. Beautiful photographs and clear drawings add to the value and interest of this book for nature lovers. A pictorial glossary is included.

THE GENERIC NAMES OF THE BEETLE FAMILY STAPHYLINIDAE: With an Essay on Genotypy—Richard E. Blackwelder—*Govt. Printing Office*, Smithsonian Bulletin 200, 483 p., $1.50. Presenting in uniform manner all the available facts on the many names in use and misuse for the various genera and subgenera of this family.

INDIAN TRIBES OF ABORIGINAL AMERICA—Sol Tax, Ed.—*University of Chicago Press*, 410 p., illus., paper, $7.50. A great deal of the information uncovered by archaeologists and anthropologists is brought together in this volume concerned with the origin and basic cultures of the Indians.

MOST OFTEN NEEDED 1952 RADIO DIAGRAMS AND SERVICING INFORMATION—M. N. Beitman—*Supreme Publications*, 12 ed., 168 p., illus., paper, $2.50. Diagrams of the various makes of radios manufactured are given to aid in the servicing of sets.

NARCOTICS: AMERICA'S PERIL—Will Oursler and Laurence Dwight Smith—*Doubleday*, 284 p., $3.50. Much of the material in this book has come from the files and publications of the various agencies concerned with the problems of narcotics.

ON THE CONSTRUCTION OF TABLES FOR MOVING-AVERAGE INTERPOLATION — William R. Thompson and Carrol S. Weil—*Mellon Institute*, 4 p., illus., paper, free upon request to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

PAPER CHROMATOGRAPHY: A Laboratory Manual—Richard J. Block, Raymond LeStrange and Gunter Zweig—*Academic Press*, 195 p., illus., $4.50. A practical manual giving proved procedures requiring only simple equipment and available reagents.

PERSONNEL PRINCIPLES AND POLICIES: Modern Manpower Management — Dale Yoder — *Prentice-Hall*, 602 p., illus., $7.95. Aimed at the "why" of manpower management, this book stresses the philosophy and major points of policy in industrial relations.

REPRESENTATIVE AMERICAN SPEECHES: 1951-1952—A. Craig Baird, Ed.—*H. W. Wilson*, 197 p., $1.75. Twenty-four speeches grouped together according to subject matter are presented with introductions for background aid.

A REVIEW OF NOMENCLATURAL CONSERVATION IN THE ALGAE FROM THE POINT OF VIEW OF THE TYPE METHOD—Paul C. Silva—*University of California Press*, 82 p., paper, $1.25. An attempt to bring into agreement the problem of nomenclatural conservation in the algae with the International Code of Botanical Nomenclature.

THE SCIENCE OF BIOLOGY—William C. Beaver—*C. V. Mosby*, 4th ed., 895 p., illus., $5.85. This revision includes many topics presented in tabular form to assist the student in comparing and contrasting one set of data with another set.

THE STORY OF WATCHES—T. P. Camerer Cuss — *Philosophical Library*, 172 p., illus., $7.50. A non-technical discussion tracing the stages in the development of the watch with many illustrations of famous timepieces.

THE TREE OF HUMAN HISTORY — Alan Houghton Brodrick—*Philosophical Library*, 253 p., illus., $4.75. Though less is known about the early history of America, China and India than about the Near East, the author includes these three countries often omitted in other discussions on the origins of civilizations.

WOOD CHIPS FOR THE LAND—Arthur C. McIntyre—*Govt. Printing Office*, Leaflet No. 323, 8 p., illus., paper, 5 cents. Several million cords of slab wood and trimmings are discarded each year. These could be returned to the soil, adding greater profits to farm operations.

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Questions

AERONAUTICS—What would be the advantage of a glass airplane? p. 101.

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ASTRONOMY—What is the highest frequency at which radio astronomers have picked up outbursts from the sun? p. 108.

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BIOCHEMISTRY—What chemical in shoes can cause itchy feet? p. 102.

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ENGINEERING—How can landslides be licked? p. 100.

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METEOROLOGY—What climate change is foreseen in the next 25 or 50 years? p. 103.

How can half the world's weather be shown in a dishpan? p. 106.

How many potential saucers are launched each day? p. 107.

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PHYSICS—What use can be made of "middle aged" water? p. 104.

• • •

SURGERY—How can a person talk when his voice box has been removed? p. 102.

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Photographs: Cover, U. S. Forest Service; p. 99, Dr. Saul S. Weinberg; p. 101, Northrop Aircraft, Inc.; p. 103, Fremont Davis; p. 106, University of Chicago.

ARCHAEOLOGY

Puzzle Origin of Dorsets

Ancient arctic people may have been New Yorkers some 5,400 years ago, radiocarbon datings of material from Dorset-like cultures now show.

➤ ORIGIN OF the ancient Dorset people, whom archaeologists call the "ghosts of the arctic" because so little is known about them, is made even more puzzling by new radiocarbon datings. These indicate that the Dorsets may have come from New York instead of the arctic.

Many archaeologists have thought that the Dorset people were either a pre-Eskimo group or a genuine Eskimo culture. Their remains have been found centered in the eastern arctic, but many similar articles have been found among the Indian remains of the northeastern part of the United States.

The early northeastern cultures showing Dorset-like materials include the Old Copper culture of the western Great Lakes region and the Lamoka, Frontenac, Laurentian and Point Peninsula cultures of New York.

Before accurate dates were available for these peoples, it was thought that the culture was diffused from north to south. Either the people themselves migrated or the characteristic Dorset-type knives, harpoons, bone combs and plummet stones were passed along by trade or diffusion of skills.

Now, through radiocarbon dating, it is learned that the Lamoka people lived in New York some 5,400 years ago. Other Dorset-like cultures date back as far as three to five thousand years.

This makes it very doubtful that these people could have come from the north which at that time was literally frozen, concludes Dr. Bernard G. Hoffman, anthropologist of the University of California.

The material used for the radiocarbon dating of the Frontenac Island culture, he points out, was taken from the deepest refuse levels of the site. It was found in a hearth in a light brown clay subsoil laid down when the island was submerged by Lake Iroquois during the Lake Algonquin III stage of the glacial period. At that time the glacial sheet extended from the north down to within a short distance of the Great Lakes basin.

Unless you can imagine a people able to exist on top of an icecap, then the Dorset culture could not have come from the north.

Alternative explanations are that the Dorset culture came from the south or southwest or that the Dorset people actually originated in this northeastern area and then moved northward as the glacial ice retreated.

Dr. Hoffman tells of his theories in *American Antiquity* (July).

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MILITARY SCIENCE

No Defined Front Line

➤ GUIDED MISSILES of modern design used as artillery will mean the practical elimination of a sustained and definable front line, will vastly increase the cost of war, will give the defense a temporary advantage over the offense and will force much greater dispersal of troops and materiel in the war zones.

An Army expert, Major Nels A. Parson, Jr., also implies that if the Germans had used their V-1's and V-2's correctly, the Allies would have been driven off the Normandy beachhead.

"SSM's," surface-to-surface guided missiles, will be able to hit ground targets beyond the capabilities of both artillery and aircraft, he said. The guided missile will complete the team, as the third and newest fire support weapon, by providing fire support wherever and whenever needed.

Maj. Parson also predicted much greater accuracy for future guided missiles than was achieved by the Germans. Their weapons had a circular probable error of four percent of the range.

"The dual problem of accurate target location and missile dispersion is not easily solved," he said, "but there are definite indications that SSM's ultimately will be highly accurate."

Targets for the SSM's would include, between 20 and 100 miles, major troop concentrations, marshalling yards, supply depots, important command centers, ports and beachheads, he stated. At closer ranges, up to about 50,000 yards, smaller targets, such as heavy fortifications, important bridges, troop and truck concentrations and supply dumps might be appropriate.

"In the near future," he declared, "no preponderance of enemy force on the ground, or in the air, will be able to eliminate defensive guided-missile fire until the launching sites are overrun."

Maj. Parson was an instructor in guided missile tactics at Fort Bliss, Texas. He is now working on his master's degree at the University of California. His estimate of guided missiles appeared in *Military Review* (Aug.), published by the Command and General Staff College.

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Do You Know?

A person weighing 150 pounds on earth would *weigh* only 25 pounds on the moon.

Until a few weeks ago, residents of *Moscow* had been without a new city telephone directory since before World War II.

Sepia, familiar in newspaper rotogravure sections, originally was an organic coloring matter obtained from the cuttlefish.

Only about half of the power developed by an *automobile* engine goes into moving the car.

The *dustywing* is a delicate, whitish, humpbacked insect, little more than ⅛-inch long, and is a natural enemy of citrus mites and scales.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C., and ask for Gadget Bulletin 635. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

WOOD STAIN can be brushed on unsanded natural wood to yield a smooth waxed-effect hardwood coloring. Indoors, the stained surface requires no shellac overcoating, but it should be protected with several coats of varnish on articles to be used outdoors.

Science News Letter, August 16, 1952

RUST PREVENTIVE for steel, brass, copper, cadmium, magnesium and other metals can be applied to high-precision machine parts to prevent fingerprints from spoiling tolerances and machined surfaces. A petroleum solvent will remove the preventive when the part is ready for use.

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PIPE FITTINGS of plastic in sizes from ½ inch to four inches in diameter are fitted quickly to Tenite plastic pipe by a cement and solvent. Special flange unions and adapters join the plastic pipe to steel. Made either of transparent or black plastic, tees, elbows, laterals and other couplings also are available in other colors on special order.

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PRE-ASSEMBLED ANTENNA for TV has a plastic-molded dipole head that holds the aluminum reflector elements, as shown in the photograph. Working on the "umbrella" principle, the reflector elements

fan into exact position and are locked by a T-bolt. The antenna then is mounted on a mast and lead-in wires are attached. Jumper bars connect sections of the antenna when two or four bays are used.

Science News Letter, August 16, 1952

SOLDER DISSOLVER removes tin, lead-tin and lead solders that have been applied to a metal object by a torch or soldering iron, or that have been coated on the piece by electro-depositing or hot-dip methods. Mixed with hot water, the chemical produces an alkaline solution that does not attack base metals, thus preserving their dimensions.

Science News Letter, August 16, 1952

MICROFILMER REDUCES papers up to 11 inches wide and of an unlimited length to 1/40 their size. Working at the rate of 500 per minute, the machine can record 29,000 bank checks on a 100-foot roll of 16 mm. film. Documents drop in sequence into a receiving hopper after being microfilmed.

Science News Letter, August 16, 1952

ADHESIVE THAT joins rubber tiles to concrete can be used on concrete slabs flush with the ground. When it gets wet, the adhesive will not "let go" of the rubber tile.

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PORTABLE TOOTHBRUSH has a built-in chamber to hold from six to 10 days' supply of toothpaste, is made of plastic and has quick-drying nylon bristles. A twist and push of the handle charges the bristles with toothpaste. Resembling a fountain pen, the toothbrush has a ventilated clip-on cap that permits it to be carried safely in pockets.

Science News Letter, August 16, 1952

• Nature Ramblings •

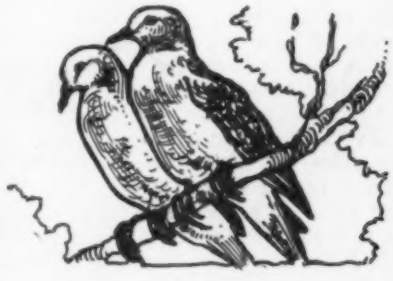
➤ IF YOU were to ask almost anyone who is acquainted with the tragedy of the passenger pigeon why that beautiful bird has been reduced from a primeval population of unknown millions to nothing at all, he would be very likely to answer at once, "Why, hunters' guns, of course!"

That would not be the correct answer at all. Unlimited massacres that went under the name of hunts did account for a great deal of the havoc, but they were not the principal one. The pioneer's ax, not the hunter's gun, must bear the main responsibility.

The passenger pigeon was a woodland bird. It needed trees for nesting and for the gregarious roosting of its huge flocks. Even more it needed acorns and beechnuts for food.

Longfellow takes note of this peculiar food habit in "Evangeline," where he speaks of

Lethal Weapon



the portentous flocks of pigeons "Darkening the sky in their flight, with naught in their craws but an acorn."

The pioneer was an enemy of the forest; or rather, he considered the forest an enemy of himself. It held land that he wanted to plow; it sheltered redskinned enemies who wanted to scalp him. So he swung his ax at the trunks of trees as he might have at the necks of stubborn foemen.

And when the pioneer stage gave way to the developmental, which often meant merely the exploitative, the early lumberman finished the job of sweeping the eastern forests clean.

All of which meant death for the passenger pigeon. The felling of the trees robbed him of both home and food, and the multiplication of the human population at the same time increased the number of hunters who had never heard of bag limits.

There may have been other factors at work, too, that we do not know about now, like epidemic diseases. At any rate, the passenger pigeon went, and went fast.

Science News Letter, August 16, 1952